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**Client:** FLASHBAY ELECTRONICS

**Contact Information:** Building2, Jixun Industrial Park, Xinjiao, Dong'ao Village, Shatian Town,  
Huiyang District, Huizhou City, Guangdong Province, P. R. China

**Test item(s):** 28 materials

**Identification/  
Model No(s):** USB Flash Drives  
Neon/NEN

**Sample obtaining method:** Sending by customer

**Condition at delivery:** Test item complete and undamaged.

**Sample Receiving date:** 2023-07-14, 2023-07-20

**Testing Period:** 2023-07-17 to 2023-07-26

**Place of testing:** Chemical laboratory Shenzhen

**Test Specification:**

**Test result:**

1. Cadmium, Lead, Chromium (VI), Mercury, Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE), ROHS Phthalates (BBP, DBP, DEHP, DIBP)  
According to RoHS(recast): Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, 2011/65/EU Annex II and its amendment Directive (EU) 2015/863

PASS

For and on behalf of  
TÜV Rheinland (Shenzhen) Co., Ltd.



2023-07-31

Alvin Huang / Senior Project Engineer

*Date*

*Name/Position*

Sample information is provided by customer. Test result is drawn according to the kind and extent of tests performed.  
This test report relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.  
"Decision Rule" document announced in our website (<https://www.tuv.com/landingpage/en/qm-gcn/>) describes the statement of conformity and its rule of enforcement for test results are applicable throughout this test report.

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**Material List:**

Item: USB Flash Drives  
Neon/NEN

Material No.	Material	Color	Location
M001	Metal	Silvery	Refer to photo
M002a	Coating	Black	Refer to photo
M002b	Plastic	Transparent	Refer to photo
M003	Plastic	Black	Refer to photo
M004	Plastic	Black	Refer to photo
M005	Textile	Black	Refer to photo
M006	Metal	Silvery	Refer to photo
M007	Metal	Silvery	Refer to photo
M008	Plastic	Transparent	Refer to photo
M009	Electronic components	Black	Refer to photo
M010	Plastic + adhesive	Transparent	Refer to photo
M011	Metal	Dull blue	Refer to photo
M012	Metal	Red	Refer to photo
M013	Plastic + printing	Transparent/ white	Refer to photo
M014	Plastic + adhesive	Silvery/ black	Refer to photo
M015	Plastic + adhesive	White	Refer to photo
M016	Solder	Silvery	Refer to photo
M017	PCB board	White	Refer to photo
M018	Electronic components	Transparent	Refer to photo
M019	Metal	Silvery	Refer to photo
M020	Plastic	Black	Refer to photo
M021	Solder	Silvery	Refer to photo
M022	Electronic components	Black/ white	Refer to photo
M023	PCB board	Green	Refer to photo
M024	Metal	Silvery	Refer to photo
M025	Plastic	Light black	Refer to photo
M026	Plastic	Light black	Refer to photo
M027	Metal	Silvery	Refer to photo

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**1. Screening Test by XRF spectroscopy**

 Test Method: Cadmium, Lead, Mercury, Chromium, Bromine  
 -- With reference to IEC 62321-3-1:2013

**Test Result:**

Material No.	Cd	Cr	Pb	Hg	Br
M001	BL	BL	BL	BL	n.a.
M002a	BL	BL	BL	BL	BL
M002b	BL	BL	BL	BL	BL
M003	BL	BL	BL	BL	BL
M004	BL	BL	BL	BL	BL
M005	BL	BL	BL	BL	BL
M006	BL	BL	BL	BL	n.a.
M007	BL	BL	BL	BL	n.a.
M008	BL	BL	BL	BL	BL
M009	BL	BL	BL	BL	BL
M010	BL	BL	BL	BL	BL
M011	BL	BL	BL	BL	n.a.
M012	BL	d.(*1)	BL	BL	n.a.
M013	BL	BL	BL	BL	BL
M014	BL	BL	BL	BL	BL
M015	BL	BL	BL	BL	BL
M016	BL	BL	BL	BL	n.a.
M017	BL	BL	BL	BL	d.(*1)
M018	BL	BL	BL	BL	d.(*1)
M019	BL	BL	BL	BL	n.a.
M020	BL	BL	BL	BL	BL
M021	BL	BL	BL	BL	n.a.
M022	BL	BL	BL	BL	BL
M023	BL	BL	BL	BL	d.(*1)
M024	BL	d.(*1)	BL	BL	n.a.
M025	BL	BL	BL	BL	BL
M026	BL	BL	BL	BL	BL
M027	BL	d.(*1)	BL	BL	n.a.

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<b>Abbreviation:</b>	Pb	=	Lead
	Cd	=	Cadmium
	Hg	=	Mercury
	Cr	=	Chromium
	Br	=	Bromine
	n.a.	=	Not applicable
	BL	=	Below limit
	OL	=	Over limit
	d.	=	Detected

**Remark:**

- (\*1) The screening result was detected in the inconclusive region or over limits, thus the further wet chemistry tests are suggested.
- (\*2) Component(s)/ materials(s) with an area of less than 2 mm x 2 mm will not be selected for testing according to RoHS Directive 2011/65/EU due to technical reason.  
For the test sample does not have detail materials information provided by client, visually identical materials (e.g. wire insulation, solder points, etc.) will be considered as the same material.  
Solder points on a printing circuit board will be examined several times based on optical anomalies or discoloration of the solder point(s) unless the solder point(s) is obviously generated automatically during production.  
All other materials will be sampled and tested at one test point representatively.
- (\*3) The Chromium (Cr) and Bromine (Br) in the above result table indicate the total chromium and total bromine by means of XRF screening. PBBs, or PBDEs content shall be further confirmed with reference to IEC 62321-6:2015. Chromium (VI) shall be further confirmed with reference to IEC 62321-7-1:2015, IEC 62321-7-2:2017 or EN ISO 17075-1:2017.

XRF Screening limits for different matrices :

Material	Concentration (%)				
	Cd	Cr	Pb	Hg	Br
<b>Polymeric</b>	BL≤0.006<X<0.014≤ OL	BL≤0.064<X	BL≤0.067<X<0.133≤ OL	BL≤0.066<X< 0.134≤OL	BL≤0.029<X
<b>Metallic</b>	BL≤0.006<X<0.014≤ OL	BL≤0.064<X	BL≤0.067<X<0.133≤ OL	BL≤0.066<X< 0.134≤OL	n.a.
<b>Composite materials</b>	BL≤0.004<X<0.016≤ OL	BL≤0.044<X	BL≤0.047<X<0.153≤ OL	BL≤0.046<X< 0.154≤OL	BL≤0.024<X

Remark: The symbol "X" marks the region where further investigation is necessary.

	Cd	Cr(VI)	Pb	Hg	PBBs	PBDEs
<b>Maximum permissible Limit (%)</b>	0.01	0.1	0.1	0.1	0.1	0.1

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**Cadmium, Lead, Chromium (VI), Mercury, Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE)**

Test Method: Total Cadmium, Lead, Mercury, Chromium  
- Ref. to IEC 62321-4:2013+AMD1:2017 and IEC 62321-5:2013

Chromium (VI)  
- For Metal material - Ref. to IEC 62321-7-1:2015  
- For Polymer, Electronic material or others materials – Ref. to IEC 62321-7-2:2017

PBBs, PBDEs – Ref. to IEC 62321-6:2015

**Test Result:**

	Cd	Cr(VI)	Pb	Hg	PBBs	PBDEs
<b>Maximum Permissible Limit (%)</b>	0.01	0.1	0.1	0.1	0.1	0.1

Material No.	RL (%)					
	Cd	Cr <sup>^</sup>	Pb	Hg	PBBs	PBDEs
	RL (%)					
	0.001	0.001	0.001	0.001	0.01	0.01
M017	n.a.	n.a.	n.a.	n.a.	< RL	< RL
M018	n.a.	n.a.	n.a.	n.a.	< RL	< RL
M023	n.a.	n.a.	n.a.	n.a.	< RL	< RL

Material No.	Chromium VI content for metal materials (µg/cm <sup>2</sup> ) (*1) RL: 0.10 µg/cm <sup>2</sup>
M012	Negative
M024	Negative
M027	Negative

**Abbreviation:**

- Pb = Lead
- Cd = Cadmium
- Hg = Mercury
- Cr = Chromium
- Cr (VI) = Chromium (VI)
- PBBs = Total Polybrominated Biphenyls
- PBDEs = Total Polybrominated Diphenyl Ethers
- < = Less than
- RL = Reporting Limit
- n.a. = Not Applicable
- <sup>^</sup> = The total Chromium have been determined
- % = Percentage

**Remark:**

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**Remark:**

- (\*1) The Chromium (VI) content of metal sample in surface layer have been confirmed with reference to IEC 62321-7-1:2015 Annex.

	Chromium (VI) concentration	Qualitative result
Negative	$<0.1\mu\text{g}/\text{cm}^2$	The sample is negative (-ve) for Cr(VI). The Cr(VI) concentration is below the limit of quantification. The coating is considered a non-Cr(VI) based coating
Inconclusive	$\geq 0.1\mu\text{g}/\text{cm}^2$ and $\leq 0.13\mu\text{g}/\text{cm}^2$	The result is considered to be inconclusive. Unavoidable coating variations may influence the determination. Recommendation: if additional samples are available, perform a total of 3 trials to increase sampling surface area. Use the averaged result of the 3 trails for the final determination.
Positive	$>0.13\mu\text{g}/\text{cm}^2$	The sample is positive (+ve) for Cr(VI). Concentration is above the limit of quantification and the statistical margin of error. The sample coating is considered to contain Cr(VI).

- (\*2) The Chromium (VI) content of plastic sample or electronic sample have been confirmed with reference to IEC 62321-7-2:2017

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**BBP, DBP, DEHP, DIBP content**

Test Method: ref. to IEC 62321-8:2017

**Test Result:**

	BBP	DBP	DEHP	DIBP
Maximum permissible Limit (%)	0.1	0.1	0.1	0.1

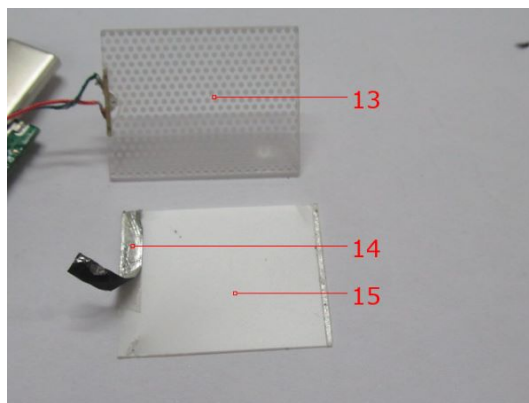
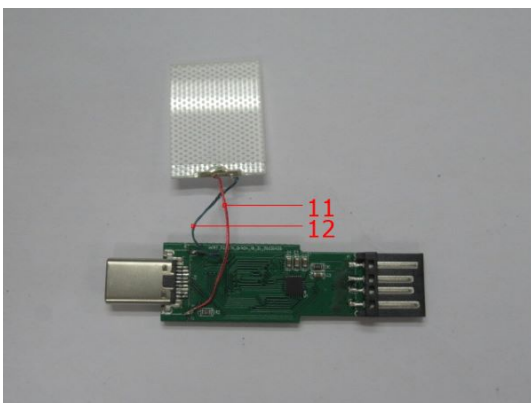
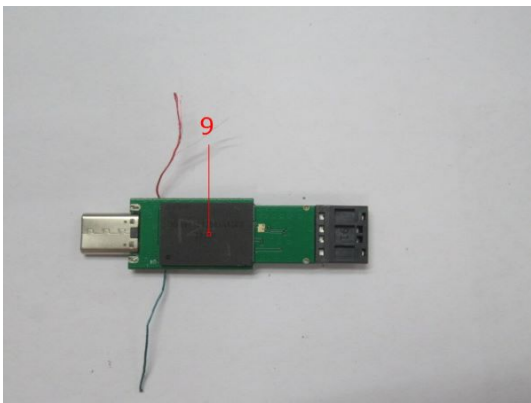
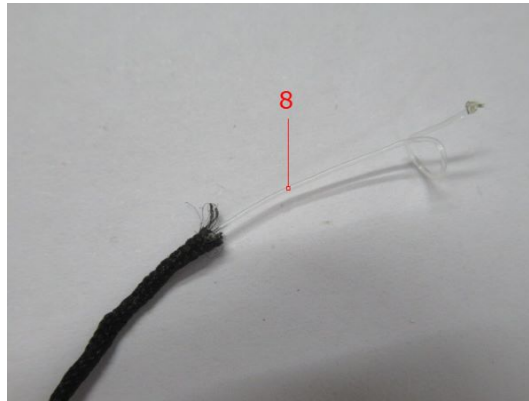
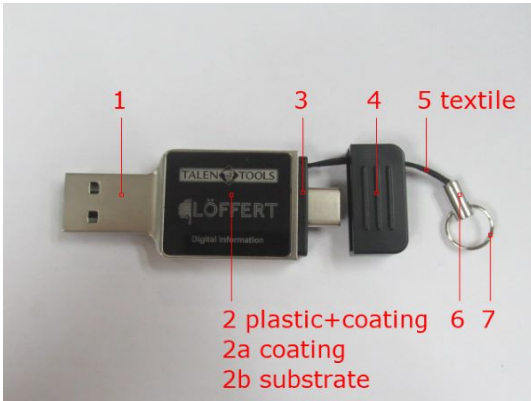
Test No.	Material No.	RL (%)			
		RL (%)			
		BBP	DBP	DEHP	DIBP
		0.005	0.005	0.005	0.005
T001	M002b + M003 + M004	< RL	< RL	< RL	< RL
T002	M017 + M025	< RL	< RL	< RL	< RL
T003	M002a	< RL	< RL	< RL	< RL
T004	M013 + M015 + M020 + M023 + M026	< RL	< RL	< RL	< RL
T005	M008	< RL	< RL	< RL	< RL
T006	M010	< RL	< RL	< RL	< RL
T007	M014	< RL	0.028	< RL	< RL

**Abbreviation:** BBP= Benzylbutyl phthalate  
 DBP= Dibutyl phthalate  
 DEHP= Bis(2-ethylhexyl) phthalate  
 DIBP= Diisobutyl phthalate  
 < = less than  
 RL = Reporting Limit  
 %= percentage

**Remark:**

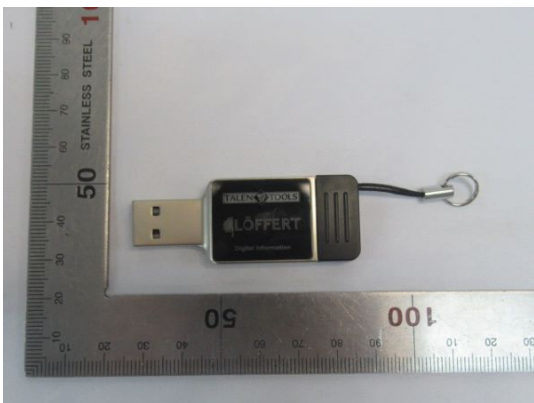
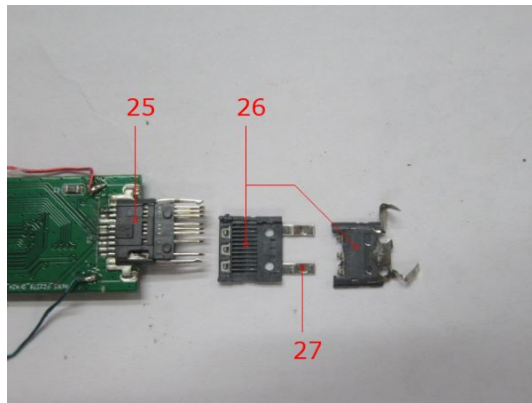
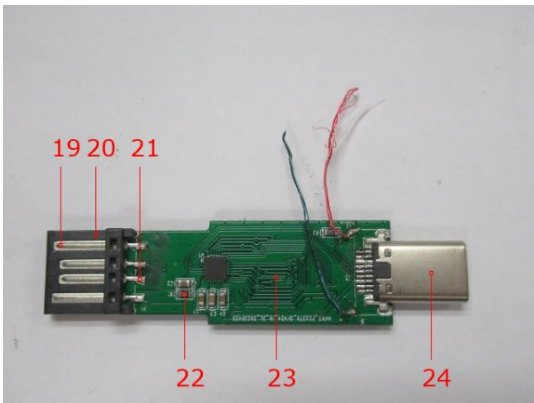
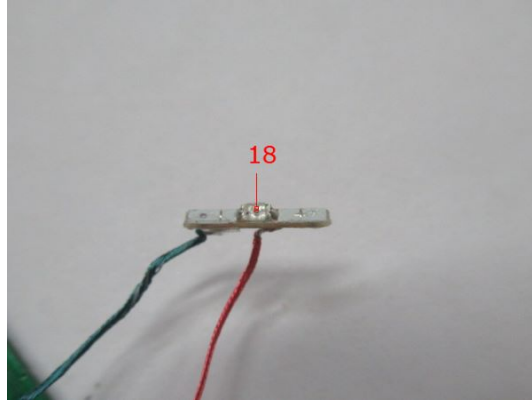
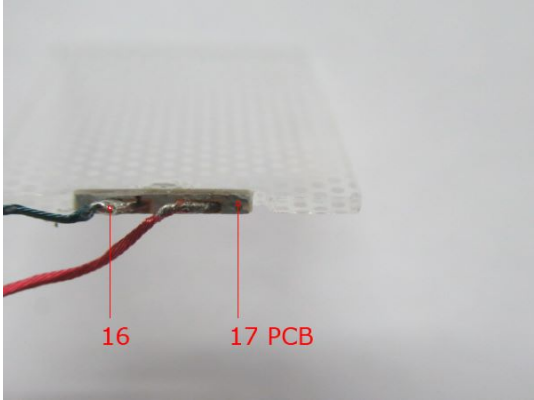
- \* The maximum permissible limit is required from the amendment (EU) 2015/863 of RoHS Directive 2011/65/EU.

Sample Photos





Sample Photos



Product

- END -

